HIV in Women

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Module 6: Key Populations
Lesson 3: HIV in Women

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Background

Women comprise more than half of people with HIV worldwide and almost 22% of people with HIV in the United States.[1,2] Medical providers who care for women with HIV should be aware of the unique health care needs of this population. This lesson will explore several of the most important clinical issues for women with HIV, including selection of appropriate antiretroviral therapy, contraception options, management of conception in serodifferent couples desiring pregnancy, gynecologic disorders, menopause, and intimate partner violence. The following topics also pertain to women with HIV but are addressed in separate lessons: (1) HIV in pregnancy (Preventing Perinatal HIV Transmission) and (2) cervical and breast cancer screening (Primary Care Management).

HIV Epidemiology in Women

Estimated HIV Prevalence in Women and Adolescent Females

At year-end 2022 in the United States, an estimated 268,800 of 1,238,000 (21.7%) of adults and adolescents living with HIV in the United States were female.[1] These HIV prevalence estimates include females living with diagnosed and undiagnosed HIV.[1] In 2022, an estimated 90.1% of females with HIV in the United States were aware of their HIV status.[1] Among all females with HIV in 2022 in the United States who had a reported transmission category, 80.3% acquired HIV through heterosexual sex and 19.1% from injection drug use (Figure 1).[1]

Estimated HIV Incidence in Women and Adolescent Females

Women and adolescent females accounted for approximately 5,900 (19.3%) of the estimated 31,800 new HIV infections in the United States in 2022 (Figure 2).[1] The number of new HIV infections in women has declined approximately 11% since 2018.[1] For those women with new HIV infections in 2022 who had reported a transmission category, 83% acquired HIV through heterosexual sex.[1]

Deaths in Women with HIV

In the United States in 2022, there were 4,446 deaths from any cause among females with HIV, with 948 of these reported as HIV-related.[3] Although the number of deaths from AIDS-related complications in the United States is now very low, deaths from any cause in both women and men with HIV have increased in recent years, primarily due to an aging population living with HIV.

Antiretroviral Therapy in Women

Indications for Antiretroviral Therapy

The Adult and Adolescent ARV Guidelines recommend antiretroviral therapy for all women with HIV to improve the health of the individual and to reduce the risk of sexual transmission of HIV.[4] This recommendation is the same as for all other adults and adolescents with HIV.[5] For pregnant women, the additional goal of antiretroviral therapy is to prevent perinatal transmission of HIV.[4]

Efficacy

Available evidence suggests that virologic responses to antiretroviral therapy are comparable between women and men.[6,7] There are, however, some differences between women and men with respect to antiretroviral medication pharmacokinetics and adverse effects, which may be due to a wide range of factors such as body weight, plasma volume, and cytochrome P450 activity.[4,8,9,10] For example, postmenopausal women with HIV who take antiretroviral therapy have a particularly high risk of developing osteopenia and osteoporosis.[11,12,13,14] In addition, a pooled analysis of eight randomized clinical trials showed increased weight gain for persons taking antiretroviral regimens containing dolutegravir or bictegravir in combination with tenofovir alafenamide, with women having a 1.52-fold greater risk than men of developing a 10% or greater weight gain.[15] The reasons for these differences in weight gain between women and men are not clearly known at this time.[16,17,18]

Selecting an Antiretroviral Regimen in Women of Childbearing Age

For women of childbearing age, it is important to carefully choose an antiretroviral regimen, taking into account regimen efficacy, hepatitis B status, potential pharmacokinetic interactions (with hormonal contraceptives and hormone replacement therapy), and any teratogenicity concerns about the antiretroviral medications in the event of pregnancy.[4] All instances of antiretroviral exposure during pregnancy should be reported online to the Antiretroviral Pregnancy Registry. For pregnant women with HIV, the Perinatal HIV Clinical Guidelines recommend combination antiretroviral therapy (with at least 3 drugs) to reduce the risk of HIV transmission to the child and to prevent HIV-related disease in the mother.[19,20] The use of antiretroviral medications in pregnant women is discussed in detail in the lesson Preventing Perinatal HIV Transmission in Module 5. The following highlights commonly used preferred antiretroviral medications in adults and adolescent women that may pose specific issues if a woman becomes pregnant while taking one or more of these medications.[21,22]

- **Bictegravir**: Bictegravir is a preferred integrase strand transfer inhibitor (INSTI) for use during pregnancy due to its high viral suppression rates, good tolerability, and high resistance barrier. At this time, it is available only as a once-daily single-tablet: bictegravir-tenofovir alafenamide-emtricitabine. Although pharmacokinetic studies have shown that bictegravir exposure is lower in the second and third trimesters, levels remain adequately therapeutic and effective for viral suppression without requiring dose adjustment.[23] Two studies involving a total of 291 pregnancies in the United States showed high maternal viral suppression and reassuring birth outcomes, supporting its safety and efficacy during pregnancy.[24]
- **Dolutegravir**: Although earlier data from an observational surveillance study of birth outcomes in a cohort of pregnant women with HIV in Botswana showed a slightly higher rate of neural tube defects in infants born to pregnant women receiving dolutegravir, subsequent studies found no significant increase in prevalence rates of neural tube defects among pregnant women taking dolutegravir-containing antiretroviral regimens compared to pregnant women with HIV taking antiretroviral regimens without dolutegravir.[25,26] Dolutegravir is a preferred INSTI for pregnant women (irrespective of pregnancy trimester) and for women trying to conceive.[20,27,28]
- **Cobicistat-Containing Regimens**: Antiretroviral regimens that contain darunavir-cobicistat or elvitegravir-cobicistat have been shown to have an increased risk of virologic failure in the second and

third trimester of pregnancy, primarily due to lowered drug levels of these medications.[29] Thus, cobicistat-containing regimens are not recommended as initial antiretroviral therapy in people of childbearing age. If a woman becomes pregnant while taking a fully suppressive antiretroviral regimen that contains cobicistat, two options exist: (1) the regimen may be continued, provided there is frequent viral load monitoring throughout the pregnancy, or (2) the regimen can be switched to a more effective and preferred regimen for use during pregnancy.[21,30]

- **Darunavir**: Studies have shown that darunavir levels significantly decline during pregnancy, even when given with a booster.[31,32] Hence, the dose recommendation for darunavir use in pregnancy is 600 mg twice daily given with ritonavir 100 mg twice daily. Once-daily darunavir boosted with ritonavir is not recommended in pregnancy.[32] In addition, darunavir-cobicistat is not recommended during pregnancy due to the marked lowering of darunavir levels.[20] If a woman trying to conceive is taking once-daily darunavir-ritonavir and becomes pregnant, the darunavir should be increased to twice daily using ritonavir as the boosting medication.[20]
- **Oral Two-Drug Therapy**: Data on the use of the FDA-approved oral two-drug antiretroviral regimens (dolutegravir-lamivudine, dolutegravir-rilpivirine, and doravirine-islatravir) in pregnancy are limited. Therefore, these regimens are not recommended for initiation during pregnancy, nor should they be used as first-line combination antiretrovirals for treatment-naïve women who are actively trying to conceive.[21] If a woman becomes pregnant while taking an oral two-drug regimen, the clinician may consider continuing the same two-drug regimen, provided the pregnant woman has an undetectable HIV RNA level.[21] Of note, dolutegravir-lamivudine is considered an *alternative* regimen for use in pregnancy, whereas dolutegravir-rilpivirine and doravirine-islatravir are not recommended.[20] In this situation, the pregnant woman can switch to a *preferred* three-drug antiretroviral regimen that is recommended in pregnancy. If the decision is made to continue the same two-drug regimen, HIV RNA levels must be monitored more frequently, typically every 1 to 2 months.[21]
- **Long-Acting Injectable Cabotegravir and Rilpivirine**: There are limited efficacy and safety data for long-acting injectable cabotegravir and rilpivirine use in pregnancy.[33] As such, the long-acting injectable regimen cabotegravir and rilpivirine is not recommended as a *preferred* or *alternative* antiretroviral regimen for pregnant women. Expert consultation should be obtained for women who become pregnant while taking long-acting cabotegravir and rilpivirine. These women may be switched to a preferred oral three-drug combination antiretroviral regimen, although the timing of switching needs to factor in the long half-life of the injectable cabotegravir and rilpivirine.[21] Women who become pregnant and continue taking long-acting cabotegravir and rilpivirine should receive every 4-week dosing and should have more frequent (every 1–2 months) viral load monitoring during their pregnancy.[30]

Contraception in Women with HIV

Health care professionals should offer all women with HIV counseling on family planning, reproductive goals, and contraceptive options, and they should emphasize the importance of HIV prevention measures, including treatment as prevention, limiting the number of sex partners, correct and consistent condom use, and availability of HIV preexposure (PrEP) and HIV postexposure (PEP) prophylaxis for their partners, regardless of the method of contraception chosen. It is also important to discuss the risks of HIV transmission associated with different contraceptive methods, as well as possible drug interactions between contraceptives and antiretroviral therapy,

Guidance for Hormonal Contraceptive Use

Several excellent resources provide guidance related to contraception in women with HIV, including the Centers for Disease Control and Prevention U.S. Medical Eligibility Criteria for Contraceptive Use (CDC U.S. MEC), the Perinatal HIV Clinical Guidelines, and the Adult and Adolescent ARV Guidelines.[4,34,35] These resources provide recommendations about the safety and efficacy of different contraceptive methods, prescribing recommendations, drug interactions, and family planning counseling for women with or at risk of acquiring HIV. Clinicians should consider these factors and patient desires when using shared decision-making to select a contraceptive method for women with HIV. All of these guidelines concur that women with HIV should be offered a full array of contraception choices, including hormonal options.[34,35]

CDC U.S. MEC Recommendations for Contraceptive Methods

The following summarizes the 2024 CDC U.S. MEC recommendations for the use of contraception in women with HIV.[34] As part of this process, the CDC U.S. MEC uses a rating system to categorize the relative risks and benefits of each contraceptive method based on a woman's medical comorbidities or medication use (Table 1).[34]

- **Hormonal Contraceptives**: In these guidelines, hormonal contraceptives consist of combined hormonal contraceptives (including combined oral contraceptives, combined hormonal patches, and the combined vaginal ring), progestin-only pills, and implants. In women with HIV who are clinically unwell or not on antiretroviral therapy, combined hormonal contraceptives, progestin-only pills, and implants may be used without restriction (category 1).[34] In women with HIV who are taking antiretroviral therapy, these contraceptives are considered safe, and the advantages of their use are thought to outweigh the risks. These are rated either CDC U.S. MEC category 1 or 2, depending on the antiretroviral therapy regimen the woman is using, due to concerns about drug interactions between contraceptives and some antiretroviral medications, especially protease inhibitors, pharmacologic boosters, and efavirenz.
- **Progestin-Only Injectable Contraceptives**: In women with HIV, progestin-only injectable contraceptives are considered safe to use without restriction (category 1).[34] Most often, depot-medroxyprogesterone acetate (DMPA) is the progestin-only injectable contraceptive used. Antiretroviral drug interactions with DMPA are generally not clinically significant. Although some evidence suggests a possible increased risk of HIV transmission and acquisition, the CDC continues to recommend DMPA (without restriction) in women with HIV.
- **Intrauterine devices (IUDs)**: Intrauterine devices (IUDs) are considered safe and effective in women with HIV, and may be used without restriction for women who are clinically well and on antiretroviral therapy (category 1).[34] Although IUDs are still considered a reasonable option for women with HIV who are clinically unwell or not on antiretroviral therapy, the U.S. MEC ranks initiation of IUDs as category 2 and continuation of IUDs previously inserted as category 1. Use of IUDs in women has not been associated with increased HIV disease progression, risk of HIV transmission, or genital viral shedding. In addition, there is no evidence to suggest increased risks of infectious complications, such as pelvic inflammatory disease (PID), associated with IUD use in women with HIV. Multiple different intrauterine devices are used for contraception (Table 2).[34,36,37,38,39,40,41]

- **Condoms:** Women with HIV using any contraceptive method other than condoms should also receive counseling regarding the use of condoms to reduce the risk of transmission of sexually transmitted infections and HIV, as well as to prevent pregnancy. This is particularly important for women with HIV on antiretroviral therapy regimens that may decrease the efficacy of their contraception method.
- **Spermicides:** The use of spermicides containing nonoxynol-9 should be avoided in women with or at risk for HIV due to concerns this spermicide may cause genital lesions, which could increase the risk of HIV transmission and acquisition. Whether used alone, with condoms, or with a diaphragm, spermicides are rated category 3 (risks of this method are thought to outweigh the benefits) in women with HIV.[34]

Contraception Use and Risk of HIV Transmission

There are limited, high-quality data that address the potential impact of contraception on HIV transmission among women with HIV. The following summarizes the available data:

- A European study of 563 HIV-serodifferent couples found no association between hormonal contraception and HIV transmission to the uninfected male partner.[42]
- A prospective cohort analysis in Africa that included 3,790 HIV-serodifferent couples (of which 2,476 had a female partner with HIV) found that women with HIV who used hormonal contraception (primarily injectable methods) had an approximately two-fold risk of transmitting HIV to their male partner compared with women who did not use hormonal contraception.[43] Women using injectable contraception had higher HIV levels in their endocervical secretions, a finding that provided a plausible mechanism for the increased transmission risk.[43] In a multivariate analysis adjusted for age, pregnancy, unprotected sex, and plasma HIV RNA level, the investigators concluded that any hormonal contraceptive use by female partners with HIV increased the HIV acquisition risk in uninfected male partners, but the effect was statistically significant only for injectable contraceptives; the women in this study were not on antiretroviral therapy.[43]
- Several other studies have investigated the effect of hormonal contraception on HIV-1 RNA set points, and on cervical and vaginal HIV shedding. Although some of these studies provide indirect evidence for a hormonally mediated increase in infectivity (higher plasma RNA and higher rates of genital HIV shedding), the results have been mixed, with several studies showing no association or even an inverse association.[44,45]
- A recent systematic review of women with HIV who used IUDs (either levonorgestrel- or copper-containing) found no difference in disease progression or genital viral shedding compared with women using other forms of contraception.[46]

Effect of Hormonal Contraception on HIV Disease Progression

Data on the impact of hormonal contraception on HIV disease progression are conflicting. Notably, most participants in clinical studies evaluating the effect of hormonal contraception on HIV progression were not taking antiretroviral therapy. Thus, it remains unclear whether having suppressed HIV RNA levels while on therapy would negate the potentially negative effects of hormonal contraception on HIV progression.[47]

- A study of 599 postpartum women with HIV in Zambia found that hormonal contraception was associated with more rapid disease progression, whereas the copper-containing IUD was safe and effective. A secondary analysis of the data confirmed this relationship.[47,48]
- The same group studied 4,109 women at risk for HIV and found that neither implants/injectables nor oral contraceptive pills were associated with HIV disease progression.[48]
- A systematic review of 10 cohort studies and one randomized trial concluded that hormonal contraception is not associated with accelerated HIV disease progression. Several outcome measures were used to determine HIV progression, including mortality, onset of clinical AIDS, time to a CD4 cell count below 200 cells/mm^3, CD4 count decline below a defined threshold, time to initiation of antiretroviral therapy, and increase in HIV RNA level.[49]

- A prospective study of 2,269 women with HIV similarly found no association between the use of hormonal contraception and accelerated HIV disease progression.[50] Another small study that specifically evaluated the levonorgestrel-releasing intrauterine device (LNG-IUD) also reported that the LNG-IUD had no adverse impact on HIV progression.[51]

Hormonal Contraception Interactions with Antiretroviral Medications

Since some antiretroviral medications and hormonal contraceptives are metabolized by the same enzyme pathways, drug interactions are a concern in women with HIV who are of childbearing age. The most common interactions between these classes of medications may compromise contraceptive efficacy but, fortunately, rarely diminish the potency of the antiretroviral medications. In general, significant interactions with antiretroviral medications are more likely to occur with combined oral and transdermal contraceptives than with iIUDs and injectable DMPA.[34,52] Some of the most significant potential drug interactions between hormonal contraceptives and antiretroviral medications are highlighted below:[4,34,35]

- **Nucleoside Reverse Transcriptase Inhibitors (NRTIs)**: There are no significant drug interactions expected between NRTIs and hormonal contraceptive methods.[53]
- **Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)**: Among the NNRTIs, efavirenz is the most likely to interact with hormonal contraceptives. Efavirenz is metabolized by the CYP3A4 enzyme pathway and may decrease blood levels of hormonal contraceptives, leading to decreased contraceptive efficacy, including the efficacy of emergency postcoital contraception.[54] The NNRTIs doravirine, etravirine, and rilpivirine do not have this effect.[34,54,55] There are no known significant interactions between NNRTIs and DMPA or levonorgestrel-releasing IUDs.[52]
- **Protease Inhibitors (PIs)**: Protease inhibitors undergo metabolism via the same CYP3A4 enzyme pathway as many hormonal contraceptives and can alter hormone levels.[4] Although PIs generally inhibit CYP3A4 and would therefore be expected to increase hormone levels, most ritonavir-boosted PIs decrease ethinyl estradiol levels and have unpredictable effects on progestins, norethindrone, and norgestimate, potentially decreasing contraceptive efficacy.[56] No significant interactions have been identified between protease inhibitors and injectable DMPA.[55,56] When women on hormonal contraceptives take protease inhibitors in the absence of a boosting agent, levels of the estrogen and progestin components of the contraceptive may increase.
- **Cobicistat:** Although relatively little is known about drug interactions between hormonal contraceptives and the pharmacologic booster cobicistat, the potent inhibition of CYP3A and CYP2D6 hepatic enzymes by cobicistat could theoretically increase contraceptive hormone levels. In addition, the effect of cobicistat on hormonal contraceptives, when used with other antiretroviral medications, is not clearly understood and, theoretically, may decrease hormone levels, similar to the effect caused by ritonavir-boosted protease inhibitors. The use of atazanavir-cobicistat with drospirenone-containing hormonal contraceptives is contraindicated due to potential hyperkalemia.[55] If darunavir-cobicistat is used with drospirenone-containing hormonal contraceptives, monitoring for hyperkalemia is recommended.[55]
- **Integrase Strand Transfer Inhibitors (INSTIs)**: The INSTIs are not substrates for CYP enzymes and thus have lower potential for drug interactions with hormonal contraceptives. Bictegravir, cabotegravir, dolutegravir, and raltegravir have all been studied with combined oral contraceptive pills; no significant drug interactions have been identified, and no dose adjustments are needed.[55,57] When elvitegravir is given in a fixed-dose combination with cobicistat, ethinyl estradiol levels decrease, and norgestimate levels increase significantly. Consequently, clinicians should consider using an alternative hormonal contraceptive in women taking elvitegravir in combination with cobicistat. If these medications are taken together, individuals should be counseled about a possible increased risk of progestin side effects, including insulin resistance, dyslipidemia, acne, and venous thrombosis.[57,58]
- **CCR5 Co-Receptor Antagonists and Fusion Inhibitors**: There are no significant drug interactions expected between these antiretroviral therapies and hormonal contraceptive methods.[59]
- **Attachment Inhibitors**: Ethinyl estradiol dosing should not exceed 30 mcg daily when administered with fostemsavir, due to increased levels of the hormonal agent, which may raise the risk for thromboembolic events.[60]
- **Capsid Inhibitors**: There are no significant drug interactions expected between the capsid inhibitor lenacapavir and hormonal contraceptives.[61]

Serodifferent Couples Desiring Pregnancy

General Recommendations

Serodifferent couples who wish to conceive a child should first ensure the partner with HIV achieves sustained virologic suppression (two plasma HIV RNA levels below the limit of detection at least 3 months apart).[35] Once the partner with HIV has achieved sustained virologic suppression, the serodifferent couple can attempt conception via condomless sexual intercourse with effectively no risk of HIV transmission.[35] Both partners should undergo screening and treatment for sexually transmitted infections before attempting conception.[35] Several studies, as highlighted below, have shown a lack of HIV transmission in serodifferent couples if the partners with HIV were taking antiretroviral therapy and had stably suppressed HIV RNA levels.[35]

- **HPTN 052**: The HPTN-052 trial was a randomized, controlled study that enrolled 1,763 HIV serodifferent, predominantly heterosexual couples from 9 countries.[62,63] All persons with HIV had a CD4 count of 350 to 550 cells/mm^3 at enrollment, and none had HIV-related symptoms.[62,63] All new HIV infections were analyzed and no phylogenetically linked HIV infections occurred between partners during the trial when the partner with HIV was taking antiretroviral therapy and had stably suppressed HIV RNA levels.[62,63]
- **PARTNER-1 Study**: In the first phase of the European PARTNER (Partners of People on ART—A New Evaluation of the Risks) study, investigators at 75 sites in 14 European countries evaluated the impact of antiretroviral therapy on HIV transmission risk in 888 HIV-serodifferent couples engaging in condomless sex, including 548 heterosexual couples.[64] Enrollment eligibility required the partner with HIV to be taking antiretroviral therapy and to have an HIV RNA level of less than 200 copies/mL.[64] During the trial, there were zero phylogenetically linked HIV transmissions that occurred in these couples, with an estimated 58,000 condomless sex acts, including an estimated 36,000 in heterosexual couples.[64] There were 11 new HIV infections during the study period, but none of these were phylogenetically linked.[64]
- **Natural Conception Study**: In this prospective study, investigators evaluated the risk of HIV transmission among 161 HIV-serodifferent couples attempting conception.[65] Enrollment required the partner with HIV to have received suppressive antiretroviral therapy for at least 6 months prior to entering the study.[65] Among the 161 serodifferent couples enrolled, 133 (83%) had a male partner with HIV, and 28 (17%) had a female partner with HIV.[65] During the study, there were a total of 144 natural pregnancies, 107 babies born, and no cases of sexual HIV transmission occurred.[65]

Female Partner with HIV

When an HIV-serodifferent couple wishes to conceive, and the female partner has HIV, the main prevention strategy is for the woman to achieve virologic suppression, defined as two plasma HIV RNA measurements below the limit of detection, before attempting conception.[35] Another option is for the man to take HIV PrEP. In addition, the risk of female-to-male HIV transmission can be eliminated, regardless of the woman's HIV RNA level, if the couple utilizes impregnation techniques without having condomless intercourse.[35] A common impregnation method is to perform periovulatory artificial insemination, either by self-insemination with the partner's semen, such as with a plastic (needleless) syringe, or with the assistance of a medical professional using intrauterine insemination.[35] In vitro fertilization is another very safe option, but it is cost-prohibitive for many couples and usually unnecessary unless fertility problems exist. If the couple changes their plan and elects to try to conceive via condomless sexual intercourse, they should be advised to proceed only after the woman has attained suppressed plasma HIV RNA levels on antiretroviral therapy for at least 3 months.[35]

Vaginitis in Women with HIV

Although most women will experience at least one episode of vaginitis in their lifetime, women with HIV develop vaginal infections more often than women without HIV.[66] These infections can influence susceptibility to sexually transmitted infections and increase the risk of HIV transmission to partners who do not have HIV. The following will address three of the most common vaginal infections that occur in women with HIV: bacterial vaginosis, vulvovaginal candidiasis, and trichomoniasis. A more comprehensive discussion of trichomoniasis is available in the Sexually Transmitted Infections lesson in Co-Occuring Conditions module and in the 2021 STI Treatment Guidelines.[66]

Bacterial Vaginosis

Bacterial vaginosis is a condition in which the predominant vaginal hydrogen peroxide-producing *Lactobacillus* species are overgrown with abundant anaerobic bacteria. Women with bacterial vaginosis may be asymptomatic or may develop vaginal discharge with a characteristic fishy (amine) odor. A comprehensive discussion of bacterial vaginosis and other causes of vaginitis is available in the Vaginitis lesson in the *National STD Curriculum*, but the following will emphasize several key concepts specific to bacterial vaginosis in women with HIV. Bacterial vaginosis occurs (and recurs) more frequently in women with HIV compared with women who do not have HIV; bacterial vaginosis increases the risk of acquiring other sexually transmitted infections, and it can also increase the risk of HIV transmission to partners without HIV.[67,68,69]

- **Diagnosis**: The gold standard for diagnosing bacterial vaginosis is a Gram's stain of the vaginal discharge, which reveals a low concentration of lactobacilli, with multiple gram-negative and gram-variable rods and cocci. In clinical practice, however, the Amsel criteria, point-of-care assays, and nucleic acid amplification tests (NAATs) are now more often used to diagnose bacterial vaginosis. The Amsel Diagnostic Criteria requires three of the following: (1) homogenous thin discharge coating the vaginal walls, (2) vaginal epithelial cells studded with adherent coccobacilli on microscopy (clue cells), (3) vaginal pH greater than 4.5, and (4) a fishy (amine) odor to the vaginal discharge that occurs when adding 10% potassium hydroxide (positive whiff test).[69] The recommended point-of-care assays include the OSOM BVBlue test, Affirm VPIII, and FemExam Test Card.[69] Recommended NAATs include the BD MAX Vaginal Panel (real-time polymerase chain reaction [PCR] assay) and the Aptima BV Test.[69]
- **Treatment**: The treatment of bacterial vaginosis for women with HIV is the same as for women without HIV. There are three recommended treatment options for nonpregnant women with bacterial vaginosis: (1) metronidazole 500 mg orally twice daily for 7 days, (2) metronidazole gel 0.75% applied in one full applicator (5 g) intravaginally once a day for 5 days, or (3) clindamycin cream 2% applied in one full applicator (5 g) intravaginally at bedtime for 7 days.[69] Alternative regimens include oral clindamycin, intravaginal clindamycin ovules, oral secnidazole, and oral tinidazole.[69,70,71] Of note, clindamycin cream and clindamycin ovules may weaken latex or rubber products (e.g., condoms and diaphragms.[69] A recent study showed that treating male sex partners of women diagnosed with bacterial vaginosis markedly reduces the incidence of recurrent bacterial vaginosis in women; in this trial, the male sex partners were treated with oral metronidazole and topical clindamycin cream (applied to the penis glans and upper shaft).[72]

Trichomoniasis

Trichomoniasis is a common sexually transmitted infection in the United States caused by a protozoan pathogen, *Trichomonas vaginalis*, and some studies have found that more than half of women with HIV are coinfected with *T. vaginalis* at some point in their lives.[73] In women with HIV, *T. vaginalis* infection increases the risk of pelvic inflammatory disease, and it increases the shedding of HIV from the genital tract,

which may increase the risk of HIV transmission.[73] Among sexually active women without HIV, *T. vaginalis* infection is also an independent risk factor for acquiring HIV.[73] A randomized clinical trial found that single-dose therapy with metronidazole 2 g orally was less effective than the 7-day metronidazole regimen for women with HIV and trichomoniasis: follow-up positive trichomonas tests were higher in the group receiving the single-dose metronidazole.[74]

- **Diagnosis**: Women with trichomoniasis may present with malodorous, yellow-green vaginal discharge, or vulvar irritation, or they may be asymptomatic. Nucleic acid amplification testing (NAAT) of vaginal, endocervical, or urine specimens has become the gold standard for diagnosing trichomoniasis in women, replacing the wet mount preparation and culture.[73]
- **Treatment**: The preferred treatment option for trichomoniasis in women with HIV is metronidazole 500 mg orally twice daily for 7 days.[73]

Vulvovaginal Candidiasis

Vulvovaginal candidiasis is a common problem among women with HIV, occurring more frequently in this population than in women without HIV.[75,76] Recurrent vulvovaginal candidiasis may be the initial clinical presentation in women with HIV; with more advanced HIV disease, vulvovaginal candidiasis is often more severe and may recur more frequently.[75,77] Vulvovaginal candidiasis can impact the vaginal epithelium and increase susceptibility to sexually transmitted infections, including HIV. In addition, women with HIV and vulvovaginal candidiasis have higher concentrations of HIV in genital fluids; it is unclear, however, whether treatment of vulvovaginal candidiasis alters the risk of HIV acquisition or transmission.[75]

- **Diagnosis**: Women in the early stages of HIV usually have manifestations of vulvovaginal candidiasis that are similar to women without HIV, namely mucosal burning and itching with evidence of white adherent plaques.[77] The diagnosis is confirmed by examining a wet mount of vaginal secretions and finding hyphal forms after applying 10% potassium hydroxide (KOH).[75] In the absence of other causes of vaginitis, such as bacterial vaginosis or trichomoniasis, a woman with candida infection should have a normal vaginal fluid pH (less than 4.5).[75] Vaginal fungal culture can be used to make a diagnosis in women with symptoms consistent with vulvovaginal candidiasis who have a negative wet mount.[75]
- **Treatment**: The preferred treatment options for vulvovaginal candidiasis in nonpregnant women consist of single-dose fluconazole 150 mg orally or short-course topical azoles.[75,77] Topical antifungal therapy should be used instead of fluconazole to treat vulvovaginal candidiasis in pregnant women with HIV.[77] If topical therapies are prescribed, it is especially important to counsel women with HIV that the available creams and suppositories are oil-based and might weaken latex condoms. For women with frequent or severe recurrences of vulvovaginal candidiasis, some experts recommend using a long treatment course (e.g., oral fluconazole 100 mg, 150 mg, or 200 mg every third day for a total of 3 doses), followed by a maintenance regimen of oral fluconazole 100 mg, 150 mg, or 200 mg weekly for 6 months.[75]

- **Prophylaxis**: Long-term prophylactic fluconazole in nonpregnant women can reduce colonization and recurrent symptoms of vulvovaginal candidiasis, but routine primary prophylaxis with fluconazole is not recommended in women with HIV.[75]

Intimate Partner Violence in Women with HIV

Intimate partner violence, defined as physical, sexual, or psychological abuse from a partner, can impact the overall health of a woman with HIV. If a woman with HIV experiences intimate partner violence, she may be at increased risk of developing mental health disorders.[78,79,80] Studies have found that 60 to 90% of women who are victims of intimate partner violence develop anxiety disorders, including post-traumatic stress disorder, and as many as 50% develop depression; these numbers are likely higher for women with HIV who already suffer higher rates of psychological disease at baseline.[81] Clinicians caring for women with HIV should screen for intimate partner violence and for accompanying mental health symptoms, given that depression and post-traumatic stress disorder decrease quality of life and have been linked to poor adherence with antiretroviral therapy and subsequent treatment failure.[82,83]

Menopause in Women with HIV

Age at Menopause

With the widespread availability of effective antiretroviral therapy, women with HIV are living longer, and more are reaching menopause.[84,85] Available data suggest that menopause occurs at an earlier age in women with HIV than in the general population; however, the results are confounded by many other factors that affect age at menopause.[84,85,86] In a prospective cohort analysis of 667 women with HIV, the presence of a CD4 count less than 50 cells/mm^3 conferred a three-fold risk of early menopause.[84] Women with HIV also appear to experience a greater burden of menopausal symptoms compared with women without HIV, but these symptoms are often overlooked.[86,87]

Effect of Menopause on HIV Acquisition and Transmission

There are concerns that age-related vaginal epithelial changes (such as atrophy and decreased mucosal integrity) might enhance the risk for HIV acquisition and transmission, in much the same way that mucosal ulcers disrupt the mucosal barrier and can enhance HIV susceptibility and shedding.[88,89] Despite these concerns, postmenopausal women with HIV have not been found to have increased genital HIV shedding compared with younger women.[89]

Antiretroviral Therapy in Peri- and Postmenopausal Women

Estrogen appears to have a protective effect on immune function, as premenopausal women have higher CD4 counts and lower HIV RNA levels than age-matched men.[90] Despite concerns that postmenopausal women might have suboptimal immunologic and virologic responses to antiretroviral therapy as a result of decreasing estrogen levels, studies have demonstrated equivalent responses to antiretroviral therapy regardless of menopausal status.[90] Although women with HIV experience higher rates of menopausal symptoms, data on the safety and efficacy of hormone replacement therapy in women with HIV are limited, and additional trials in this patient population are needed.[91] Because current guidelines emphasize careful assessment of the risks and benefits of hormone replacement therapy for treating menopausal symptoms, the decision to use hormone replacement therapy in women with HIV should be individualized.[92]

Impact of Menopause on Other Conditions

Earlier onset of menopause requires heightened vigilance for conditions that are associated with postmenopausal status, such as osteoporosis and cardiovascular disease, especially since HIV infection (and antiretroviral therapy, in some cases) may directly increase a woman's risk of developing these disorders.[84,85,86,93] There are no HIV-specific surveillance recommendations for these conditions in women with HIV, but clinicians should emphasize the importance of age-appropriate screening and counsel about secondary prevention measures, including smoking cessation and regular exercise.

Summary Points

- In the United States, women and girls comprise an estimated 22% of all persons with HIV and approximately 19% of new HIV infections.
- Among women and adolescent girls in the United States with HIV, the identified factors for HIV acquisition are heterosexual contact in 83% and injection drug use in 17%.
- Women and men have similar virologic responses to antiretroviral therapy, though women are more likely to experience an increase in some antiretroviral-related adverse effects, such as loss of bone mineral density with tenofovir DF and ritonavir-boosted protease inhibitors.
- For women with HIV who may become pregnant, the antiretroviral regimen should take into account regimens that are recommended for use during pregnancy.
- Women with HIV should be offered the full array of contraceptive options and counseled on potential drug interactions with antiretroviral therapy.
- Women with HIV experience vaginal infections more often than women without HIV, and these infections can increase susceptibility to sexually transmitted infections and risk of HIV transmission to uninfected partners.
- Women with HIV experience high rates of intimate partner violence and should be screened for this as part of their comprehensive care.
- Menopause may occur earlier and be more symptomatic in women with HIV compared to women without HIV, but there is no data to support a link between menopause-related vaginal mucosal changes and an increased risk of HIV transmission to others.

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Figures

Figure 1 Transmission Categories for Females* Living with HIV in the United States, 2022

*Estimate for females ≥13 years of age living with diagnosed or undiagnosed HIV
Other = perinatal acquisition, hemophilia, blood transfusion, and risk factor not reported or identified

Source: Centers for Disease Control and Prevention. Estimated HIV Incidence and Prevalence in the United States, 2018–2022. HIV Surveillance Supplemental Report. 2024;29(No. 1):1-131. Published May 2024.

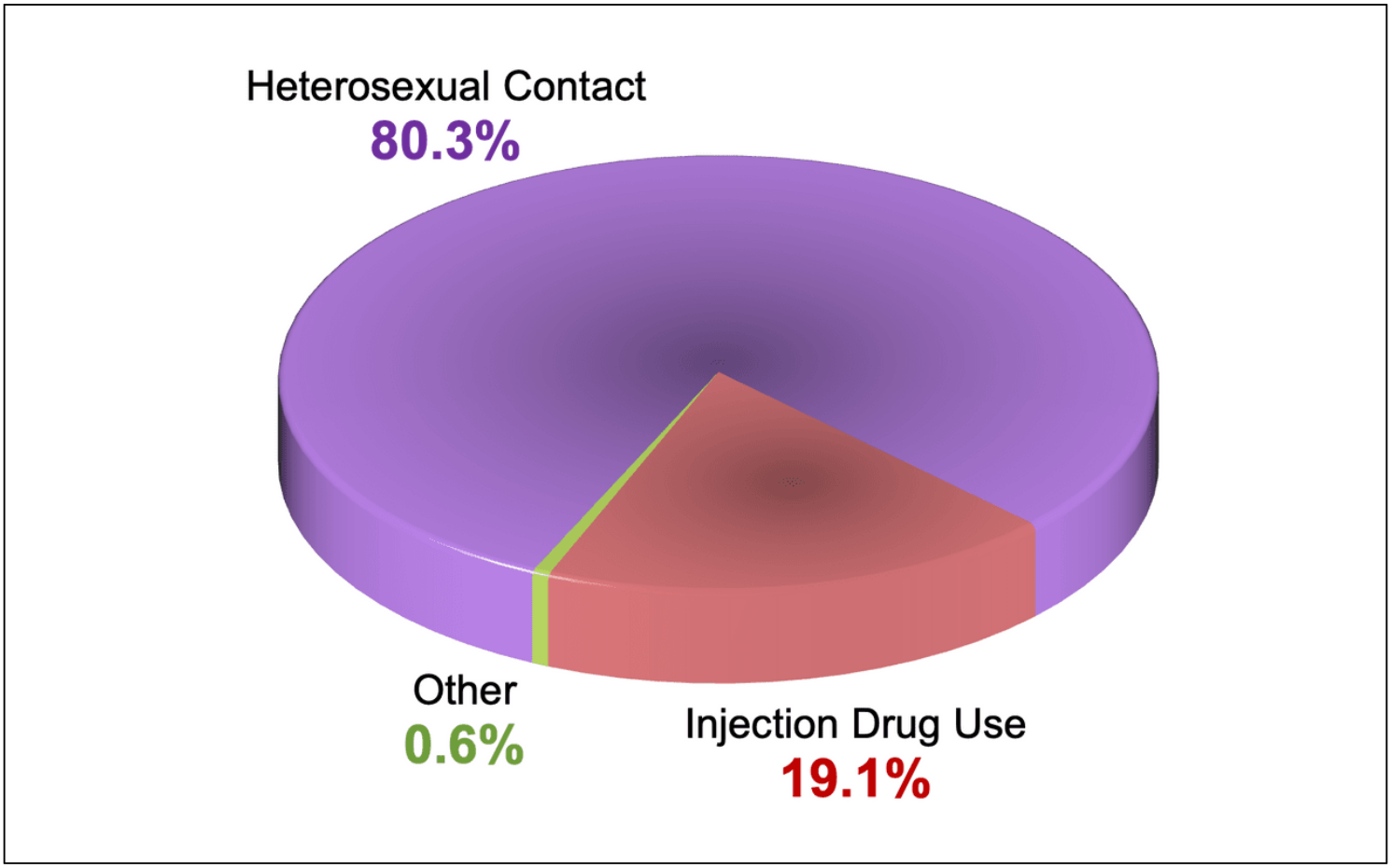


Figure 2 New HIV Infections Among Females in the United States

Source: Centers for Disease Control and Prevention. Estimated HIV Incidence and Prevalence in the United States, 2018–2022. HIV Surveillance Supplemental Report. 2024;29(No. 1):1-131. Published May 2024.

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Table 1. CDC U.S. Medical Eligibility Criteria (MEC) Categories for Classifying Contraceptive Methods

MEC Category	Description
1	A condition for which there is no restriction for the use of the contraceptive method
2	A condition for which the advantages of using the method generally outweigh the theore proven risks
3	A condition for which the theoretical or proven risks usually outweigh the advantages of method
4	A condition that represents an unacceptable health risk if the contraceptive method is us

Source:

- Nguyen AT, Curtis KM, Tepper NK, et al. U.S. Medical Eligibility Criteria for Contraceptive Use, 2024. MMWR Recomm Rep. 2024;73:1-126. [PubMed Abstract]

Table 2. Intrauterine Devices Used for Contraception

Device	Component in IUD	Pregnancy Rate Year 1*	Approved Duration^
Non-Hormonal Copper IUD			
ParaGard	Copper coil	0.60-0.80%	Up to 10 years
Levonorgestrel-Releasing IUDs			
Mirena	52 mg levonorgestrel	0.20%	Up to 8 years
Liletta	52 mg levonorgestrel	0.15%	Up to 8 years
Kyleena	19.5 mg levonorgestrel	0.16%	Up to 5 years
Skyla	13.5 mg levonorgestrel	0.41%	Up to 3 years

*These year 1 pregnancy rates are based on information provided in prescribing information
^Approved Duration = U.S. Food and Drug Administration (FDA) approved duration of use for pregnancy prevention

Source:

- Curtis KM, Peipert JF. Long-Acting Reversible Contraception. N Engl J Med. 2017;376:461-468. [PubMed Abstract]
- Kyleenah (levonorgestrel-releasing intrauterine system) [Product Information]
- Liletta (levonorgestrel-releasing intrauterine system) [Product Information]
- Mirena (levonorgestrel-releasing intrauterine system) [Product Information]
- Paragard (intrauterine copper contraceptive) [Product Information]
- Skyla (levonorgestrel-releasing intrauterine system) [Product Information]